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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,372	01/09/2002	Dae Gab Gweon	EUN01 005	4145

7590

09/03/2003

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EXAMINER

PUNNOOSE, ROY M

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/040,372

Applicant(s)

GWEON ET AL.

Examiner

Roy M. Punnoose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 6) ☐ Other: _____

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application serial number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The serial number does not appear on the un-executed copy of the declaration.

Therefore a new copy of the oath/declaration with application serial number, filing date, inventor name, citizenship, residence, and postal address is required.

Specification

2. This application is replete with typographical and other errors, some of which are listed below. The applicant is required to review the application thoroughly and correct all errors.

(a). The abstract simply recites claim 1 word for word. The recitation begins with the statement "An ellipsometer for aligning incident angle ..." whereas, under the "Field of the Invention" heading, the applicant states that "an ellipsometer ... for measuring surface characteristic of a specimen ..." (see page 1, lines 5-8 of instant application). It is generally known in the art that an ellipsometer is used for measuring surface characteristic of a specimen as correctly stated by the applicant on page 1, and not for aligning an incident angle and stated in the claim. Appropriate correction is required.

Applicant is reminded that the proper content of an abstract of the disclosure should be as below:

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A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

(b). A character to designate a variable appears to be missing in several parts of the specification, for example, on page 2, line 24, between “and” and “tilt”; on page 3, line 1, between “the” and “tilt”; on page 3, line 3; on page 3, line 7; on page 4, line 18; on page 6, line 23; on page 12, line 2; on page 15, lines 11 and 12, etc., etc.

(c). Typographical errors: “groove-carved” on line 25, page 5, and, line 5 of claim 1 have incorrect spelling; there is extra space between “3^o” and comma on page 4, line 5.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because the reference sign 2 is not mentioned in the description. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are

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required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to under 37 CFR 1.83(a) because they fail to show Figure 7A as described in the specification (see page 8, line 6). Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The following have rendered the claim vague and indefinite:

(a). The preamble of claim 1 recites "An ellipsometer for aligning incident angle ...".

It is generally known in the art that an ellipsometer is used for measuring surface characteristic of a specimen, as correctly stated by the applicant on page 1 of the instant application, and not for aligning an incident angle.

(b). It is claimed that a specimen stage is installed at the groove-carved surface of the main frame. The drawing or the specification does not support this.

(c). It is not clear what is meant by "capable of fixing and moving" (see lines 8 and 11). Did the applicant meant to state, "movably attached"? and,

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(d). It is not clear what is meant by "A light detecting unit, ... for a reflection light ..."

Did the applicant meant to state, "A light detecting unit, ... for receiving reflected light ..."?

7. Claim 11 recites the limitation "the specimen" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michaelis et al (US 6,031,614) in view of Anthon (US 4,192,995).

(A). Michaelis et al (Michaelis hereinafter) discloses an ellipsometric apparatus comprising a semi-circular mainframe with a plurality of radial grooves on the main frame (see Figure 8), a specimen stage 22 with a tilt/translation stage 24, a polarizer 606 for polarizing light from a light source 28, and, outputting the polarized light to a specimen 26, an analyzer 612, and a light detecting unit 32 for detecting light reflected from the specimen 26, wherein the incident angle of the light may be adjustable (see col.7, lines 22-23) for accurately measuring surface characteristic of a specimen. However, Michaelis does not teach of a groove that is circumferentially carved groove in an ellipsometric apparatus for accurately measuring surface characteristic of a specimen.

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(B). Anthon teaches the use of a circumferentially carved groove (see Figure 1) for guiding and adjusting the incident angle of a light source 26 (see col.2, lines 19-26).

(C). In view of Anthon's teachings, it would have been obvious to one of ordinary skills in the art at the time the invention was made to incorporate the use of circumferentially carved groove into Michaelis' apparatus due to the fact that such a groove would provide additional guidance for adjusting the incident angle of a light source in an ellipsometric apparatus for accurately measuring surface characteristic of a specimen. Accordingly, such incorporation would have constituted an alternative means/obvious engineering expedience for one of ordinary skill in the art.

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Michaelis et al (US 6,031,614) in view of Anthon (US 4,192,995) as applied to claims 1, 2 and 8 above, and further in view of Drevillon et al (US 5,485,271).

(A). Michaelis and Anthon teach all claim limitations as disclosed above. However, Michaelis and Anthon do not explicitly disclose using a modulator in an ellipsometric apparatus for modulating the polarized light for accurately measuring surface characteristic of a specimen.

(B). Drevillon et al (Drevillon hereinafter) discloses a modulator 8 (see abstract) in an ellipsometric apparatus for modulating the polarized light for accurately measuring surface characteristic of a specimen.

(C). In view of Drevillon's teachings, it would have been obvious to one of ordinary skills in the art at the time the invention was made to incorporate the use of a modulator into Michaelis' apparatus due to the fact that such a modulator would provide additional

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measurement accuracy in an ellipsometric apparatus for measuring surface characteristic of a specimen. Accordingly, such incorporation would have constituted an alternative means/obvious engineering expedience for one of ordinary skill in the art.

11. Claims 4-7 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michaelis et al (US 6,031,614) in view of Anthon (US 4,192,995) as applied to claims 1, 2 and 8 above, and further in view of what is commonly known in the art.

(A). Michaelis and Anthon teach all claim limitations as disclosed above. However, Michaelis and Anthon do not explicitly disclose using balls for accurately moving the polarizer and detector and using a magnet for attaching the said devices to the mainframe in an ellipsometric apparatus for accurately measuring surface characteristic of a specimen.

(B). Using balls for accurately moving any sub-assembly of an instrument and using a magnet for attaching or securing parts together is commonly known in the art.

(C). In view of what is commonly known in the art, it would have been obvious to one of ordinary skills in the art at the time the invention was made to incorporate the use of balls for accurately moving any the polarizer or detector, and, the use of a magnet for attaching or securing parts together into Michaelis' apparatus due to the fact that such incorporation would provide additional measurement accuracy in an ellipsometric apparatus for measuring surface characteristic of a specimen. Accordingly, such incorporation would have constituted an alternative means/obvious engineering expedience for one of ordinary skill in the art.

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12. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michaelis et al (US 6,031,614) in view of Anthon (US 4,192,995) as applied to claims 1, 2 and 8 above, and further in view of what is commonly known in the art.

Claims 11-13 are rejected because Michaelis and Anthon teach all claim limitations as disclosed above, and additionally, measuring tilt and translating angle errors, compensating each error by moving a light spot reflecting from a specimen onto a center of detectors' entrance aperture (for maximum light input), and aligning incident angle of the ellipsometer by repeatedly performing the measuring and compensating steps takes only routine experimentation, obvious engineering expedience and ordinary skill in the art.

Allowable Subject Matter

13. Claim 14 is objected to as being dependent on a rejected base claim. Claim 14 would be allowable if the above objection can be overcome.

14. Claim 14 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious a precision auto-alignment method comprising steps of a first center position in a X-direction and a second center position in a Y-direction, in combination with the rest of the limitations of said claim.

Conclusion

15. The prior art cited in the 'Notice of References Cited' is made of record and not relied upon is considered pertinent to applicant's disclosure

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16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Examiner Roy M. Punnoose** whose telephone number is **703-306-9145**. The examiner can normally be reached on 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the applicant can reach his *Supervisory Patent Examiner, Frank G. Font*, at (703) 308-4881.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-0530.

Roy M. Punnoose
Patent Examiner
Art Unit 2877
August 24, 2003



Mr. Frank G. Font
Supervisory Patent Examiner